

A.J. Eggenberger, Chairman
John E. Mansfield, Vice Chairman
Joseph F. Bader
Larry W. Brown
Peter S. Winokur

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700 Washington, D.C. 20004-2901
(202)694-7000



September 4, 2008

The Honorable James A. Rispoli
Assistant Secretary for Environmental Management
U. S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0113

Dear Mr. Rispoli:

The staff of the Defense Nuclear Facilities Safety Board (Board) visited the Savannah River Site (SRS) during June 18–19, 2008, to review the SRS High-Level Waste (HLW) Tank Integrity Program. The review focused on ultrasonic testing (UT) of Type III and IIIA (double-shell) HLW tanks and the integrity of Type IV (single-shell) tanks. This review represents a continuing effort by the Board to follow the *In-Service Inspection Plan for High-Level Waste Tanks* (Inspection Plan), which was originally provided to the Board under Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*. The Board provided comments on the Inspection Plan in a June 11, 2002, letter that strongly encouraged the Department of Energy (DOE) to expand the number of tanks inspected to all 27 Type III/IIIA HLW tanks. DOE submitted Revision 1 of the Inspection Plan to the Board on April 28, 2003, which addressed the Board's comments at that time. In 2007, Washington Savannah River Company (WSRC) completed the first round of UT inspections of all 27 Type III/IIIA HLW tanks.

The Board notes that the HLW Tank Integrity Program, including the Inspection Plan, must be a continuing effort to ensure the safety and viability of the tanks. The Type III/IIIA tanks are critical components for safely meeting the long-term objectives of HLW storage and treatment at the site.

The Board conducted detailed reviews of the UT inspection reports for all 27 Type III/IIIA tanks. Based on those reviews and the site visit by the Board's staff, the Board has identified several issues related to the HLW Tank Integrity Program and the Inspection Plan. These issues are listed below and detailed in the enclosed report:

- The Inspection Plan is based on the assumptions that pits in the HLW tank steel liners are preexisting flaws and are not growing. These assumptions are not supported by sufficient and convincing data. As a result, the Board believes the Inspection Plan should require reexamination of pits to evaluate pit growth rates in all five tanks known to have pits.

- The Inspection Plan is also based on an assumption that pitting varies only in the vertical direction along the tank walls and not in the circumferential direction. This assumption is not supported by sufficient data. The Board believes that conducting inspections in all accessible risers, spaced around the full circumference of at least one Type III/IIIA tank, would help validate assumptions in and strengthen the basis for the Inspection Plan.
- The Inspection Plan does not adequately address the potential for liquid-air interface pitting at tank heights corresponding to stagnant waste levels. UT inspection of such an area is included in the Inspection Plan for only one tank. The Board suggests conducting a review of HLW tanks having a history of relatively constant waste levels. This review could identify areas that have a high potential for pitting, which then could be included in the Inspection Plan.

The enclosed report provides additional discussion of the HLW Tank Integrity Program at SRS. Pursuant to 42 U.S.C. § 2286b(d), the Board requests that DOE brief the Board within 45 days of receipt of this letter on actions to be taken to address the issues listed above including impacts on the Inspection Plan.

Sincerely,

A handwritten signature in black ink, appearing to read "A. J. Eggenberger". The signature is fluid and cursive, with a large, stylized "A" and "E".

A. J. Eggenberger
Chairman

Enclosure

c: Mr. Jeffrey M. Allison
Ms. Shirley J. Olinger
Mr. Mark B. Whitaker, Jr.